

**CLAIMS**

We Claim:

- 5           1.       A method of automating a decision-making process related to an organization based on a collection of data reflecting a state of the organization, the method comprising:
- selecting discrete coupleable items executable in a computer-implemented workflow environment, wherein the discrete coupleable items encapsulate work  
10       associated with activities identified by decomposing the decision-making process; and
- creating an executable workflow by coupling a plurality of the discrete coupleable items, wherein at least one of the discrete coupleable items defines a query to be run against the collection of data, at least one of the discrete coupleable  
15       items defines an analysis to be performed based on results of the query, and at least one of the discrete coupleable items defines distribution of information based on the analysis to one or more destinations.
2.       The method of claim 1 further comprising:
- 20       scheduling the executable workflow for automatic execution.
3.       The method of claim 2 wherein scheduling comprises:
- specifying a condition as a state change in data of the data collection serving as input to the decision-making process; and  
25       responsive to determining the condition has occurred, automatically executing the workflow.

4. The method of claim 1 further comprising:  
scheduling the executable workflow for automatic initiation upon detection  
of a specified state change in the collection of data
5. The method of claim 1 wherein the executable workflow comprises  
at least one template having unbound values.
6. The method of claim 1 wherein the executable workflow comprises  
at least one conditional branch.
7. The method of claim 1 wherein the executable workflow comprises  
at least one gate.
8. The method of claim 1 wherein the executable workflow is sharable  
among a plurality of users.
9. The method of claim 1 wherein the collection of data comprises a  
data warehouse.
10. The method of claim 9 wherein the data warehouse comprises  
databases having disparate schema.
11. The method of claim 1 further comprising:  
executing the executable workflow.
12. The method of claim 11 further comprising:  
tracking workflow execution duration time.

13. The method of claim 11 further comprising:  
during execution of the executable workflow, responsive to detecting a plurality of inputs to an item within the workflow, instantiating multiple instances of the item for accepting the inputs.

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14. The method of claim 1 wherein the executable workflow is operable to specify a proposed course of action to avoid a potential problem.

15. The method of claim 14 wherein the executable workflow is operable  
10 to specify a proposed course of action to avoid a budget overrun.

16. The method of claim 1 wherein the executable workflow is operable to identify a problem and provide a recommendation for avoiding the problem.

15 17. The method of claim 1 further comprising:  
specifying a condition to trigger automatic initiation of execution of the executable workflow in the computer environment.

18. The method of claim 1 wherein at least one of the destinations  
20 represents a decision-maker.

19. The method of claim 1 wherein at least one of the destinations is associated with a wireless device.

25 20. The method of claim 1 wherein at least one of the destinations is an email address.

21. The method of claim 1 wherein at least one of the destinations is associated with web page.

22. The method of claim 1 wherein at least one of the destinations is associated with database.

5 23. The method of claim 1 wherein at least one of the items defines a presentation event to a decision-maker.

24. The method of claim 23 further comprising:  
tracking a decision-maker's reaction to the presentation event.

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25. The method of claim 1 wherein the executable workflow comprises a metasequence.

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26. The method of claim 1 further comprising:  
persisting the interim state of the workflow;  
providing access to the interim state of the workflow to a decision-maker.

27. The method of claim 26 wherein providing access comprises  
providing a hyperlink to the interim state of the workflow.

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28. The method of claim 1 wherein the executable workflow distributes  
a link to interim processing performed during execution of the workflow.

29. The method of claim 1 wherein the executable workflow performs  
25 closed-loop processing without further user input.

30. The method of claim 1 wherein the executable workflow reflects best  
practices of the organization.

31. The method of claim 1 wherein the executable workflow reflects best practices of the organization as determined by repeated execution and refinement of the workflow.

5 32. The method of claim 1 wherein the executable workflow distributes information based on stored user permissions.

33. The method of claim 1 wherein the executable workflow selectively distributes exceptions when detected in the collection of data.

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34. The method of claim 1 further comprising:  
publishing the executable workflow to a plurality of users of the computer environment.

15 35. A computer-implemented method of automating a financial-based decision-making process for an organization, the method comprising:  
creating an executable workflow for identifying budget overruns for cost centers, wherein the executable workflow comprises a plurality of executable directives, at least one of the directives is operable to query a data warehouse to  
20 generate information relating to the cost centers, at least one of the directives is operable to analyze the generated information to identify significant budget overruns, and at least one of the directives is operable to distribute information indicating the identified budget overrun to a manager responsible for the cost center;  
scheduling the executable workflow for periodic execution; and  
25 executing the executable workflow to generate automatic notifications to the manager responsive to detecting a budget overrun.

36. A computer-implemented method of generating and distributing information based on a collection of data, the method comprising:

creating an executable sequence of associated discrete items executable in a computer environment, wherein at least one of the items defines a query to be run  
5 against the collection of data, at least one of the items defines a distribution directive operable to distribute information based on the query to at least one destination, and at least two of the items are coupleable; and

scheduling the executable sequence for automatic execution in the computer environment, wherein at least one of the coupleable items is denoted as coupled to  
10 another of the coupleable items.

37. A computer-readable medium comprising computer-executable instructions for performing the method of claim 36.

38. A computer-implemented method of selectively providing  
15 information based on a collection of data, one or more stored queries, one or more stored analysis directives, and one or more distribution directives, the method comprising:

periodically querying the collection of data according to the stored queries to  
20 generate one or more result sets;

analyzing the result sets according to the stored analysis directives to generate one or more refined result sets; and

forwarding information based on the refined result sets according to the stored distribution directives.

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39. A computer-implemented method of defining query-based processing to be performed for a collection of data, the method comprising:

selecting a plurality of processing directives, wherein at least one of the processing directives is a query, and at least two of the processing directives are coupleable; and

associating the processing directives into an executable sequence operable to generate and distribute information from the collection of data when executed, wherein at least a first of the processing directives is denoted as coupled to at least a second, other of the processing directives.

40. The method of claim 39 further comprising:

scheduling the executable sequence for automatic periodic execution.

41. The method of claim 39 wherein the processing directives are processed by processing directive coordinators, at least one of which is operable to provide results in markup language and at least one of which is operable to process results in markup language as input.

42. The method of claim 39 further comprising:

during execution of the executable sequence, as a result of processing the first processing directive, generating a result set; and

during execution of the executable sequence, coupling the second processing directive to the first processing directive by providing an identifier identifying the result set.

43. The method of claim 39 wherein at least one of the processing directives is operable to accept input from another processing directive denoted as coupled thereto and distribute information to one or more destinations based on the input from the other processing directive.

44. The method of claim 43 further comprising:  
scheduling the processing directives for periodic execution to provide  
5 notifications of data exceptions in the data collection to at least one of the  
destinations.

45. The method of claim 43 wherein the processing directive operable to  
distribute information is operable to distribute information to a web site, the method  
10 further comprising:  
scheduling the processing directives for periodic execution to update the web  
site.

46. The method of claim 43 further comprising:  
15 scheduling the processing directives for periodic execution to automatically  
order additional inventory responsive to detecting a shortage.

47. The method of claim 43 wherein the processing directive operable to  
distribute information is configurable to distribute information to a variety of  
20 destination types.

48. The method of claim 47 wherein the destination types comprise the  
following destination types:  
a wireless device destination type; and  
25 an email destination type.



49. The method of claim 43 wherein  
at least one of the destinations is associated with a user; and  
distribution of at least some of the information directed to the processing  
directive operable to distribute information is blocked based on stored permissions  
5 of the user.

50. The method of claim 49 wherein  
at least one of the destinations is associated with another user; and  
access to the blocked information is permitted for the other user based on  
10 stored permissions of the other user.

51. The method of claim 43 wherein the sequence produces interim  
results, the method further comprising:  
storing the interim results; and  
15 distributing to at least one of the destinations a link by which the interim  
results can be accessed.

52. The method of claim 51 further comprising:  
blocking access to at least a portion of the interim results by a user based on  
20 stored permissions for the user.

53. The method of claim 39 further comprising:  
responsive to the associating, when executing the sequence, coupling output  
of the first processing directive to input of the second processing directives.  
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54. The method of claim 39 wherein at least one of the processing  
directives is operable to select one out of at least two possible next processing  
directives denoted as coupled thereto during execution to selectively direct  
execution flow.

55. The method of claim 39 wherein at least one of the processing directives is operable to filter out information not meeting specified criteria.

5 56. The method of claim 39 wherein at least one of the processing directives is operable to filter out information not appearing in a top  $n$  records according to a specified sorting criteria.

57. The method of claim 39 wherein:  
10 the sequence comprises at least a query processing directive, an analysis processing directive, and a distribution processing directive.

58. The method of claim 57 wherein at least one query processing directive and at least one analysis processing directive generate results in a same  
15 format, and the analysis processing directive and at least one distribution processing directive accept results in the same format.

59. The method of claim 58 wherein the format is XML.

20 60. The method of claim 39 further comprising:  
when executing the sequence, storing a result set accessible to and of a format processable by the second processing directive to couple the output of the first processing directive to the input of the second processing directive.

25 61. The method of claim 60 wherein the result set is of a markup language format.

62. The method of claim 60 wherein the result set is of XML format.

63. The method of claim 60 wherein the result set is accessible to the second processing directive via an identifier identifying the result set.

64. The method of claim 39 wherein at least one of the processing  
5 directives is sharable among a plurality of users.

65. The method of claim 39 wherein at least one of the processing directives is included in another executable sequence.

10 66. The method of claim 65 further comprising:  
accepting user edits to the processing directive to modify execution of more than one sequence.

15 67. The method of claim 39 further comprising:  
publishing the executable sequence to a plurality of users.

68. The method of claim 67 further comprising:  
accepting user edits to the published executable sequence; and  
saving the edited published executable sequence as a separate executable  
20 sequence.

69. A computer-implemented method of defining query-based processing to be performed for a collection of data, the method comprising:  
selecting a set of a plurality of chainable discrete database operation items,  
25 wherein the set of chainable discrete database operation items is operable to generate information from the collection of data and at least one of the chainable discrete database operation items is a query; and  
associating the chainable discrete database operation items into an executable sequence.

70. A computer-based system for defining an executable workflow representing a decision-making process, the system comprising:

- an item builder for building discrete coupleable items encapsulating work  
5 associated with an activity associated with the decision-making process;
- an item coupler for associating plural discrete coupleable items encapsulating work associated with an activity associated with the decision-making process into an executable workflow.

10 71. A computer-implemented system for defining query-based processing to be performed for a collection of data via specification of a sequence of loosely-coupled processing directives, the system comprising:

- a sequence definer for accepting a set of loosely-coupled processing directives, wherein at least one of the processing directives is a query and stores  
15 query results in XML format, wherein at least one of the processing directives is a distribution directive and accepts its input in XML format;
- a sequence execution coordinator for coordinating execution of the sequence and coupling the processing directives during execution of the sequence.

20 72. A software-based system for defining query-based processing to be performed on a collection of data, the system comprising:

- a sequence builder operable to accept a selection of a plurality of processing directives for generating information from the collection of data, wherein at least one of the processing directives is a query and at least one of the processing  
25 directives is a template;
- a parameter acceptor for accepting parameters to be bound to the template;
- and
- a bindery for associating the processing directives and the parameters into an executable sequence.

73. A computer-based system for defining query-based processing to be performed on a collection of data, the system comprising:

- means for specifying a plurality of processing directives for generating  
5 information from the collection of data, wherein at least one of the processing  
directives is a query, at least one of the processing directives is a template, and a  
plurality of processing directives can be selected;
- means for accepting one or more parameters to be bound to the template; and
- means for combining the processing directives and the parameters into an  
10 executable sequence.